



The New Mount Stromlo SLR System

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Mount Stromlo SLR: 1998-2003



This SLR site achieved outstanding productivity, safety, and data quality.

Stromlo SLR: January 2003



On 18 January 2003, a 35 km fire [part of a 300 km long fire front reaching across 2 states] reached Canberra.

The Stromlo SLR was located in dense forrest, and was consumed in minutes.



Stromlo Recovery Schedule



- *19 Jan 03: First planning meeting for new site.*
- *03 Jul 03: Environmental and planning approvals*
- *04 Jul 03: EOS awarded contract to rebuild Stromlo*

By 4 July 2003 all specification, building permit, environmental approval, and contractual issues were resolved, and the reconstruction commenced.

Target date for operations: 4 April 2004 [9 months]

Top-Level Design Parameters



Performance and productivity improvements

- ***Safety: Intrinsically eyesafe operations***
- ***Missions: Lower [200 km] and higher [LLR]***
- ***Productivity: More and better data***
- ***Software: Expert System platform for future***

Enhanced SLR Safety Design



There are 3 potential safety modes for SLR:

- *Intrinsically Eyesafe:* [Class 1A] operations
- *Microjoule operations:* Not Class 1A but “safe”
- *“Protected” mode:* Aircraft detection and avoidance

Stromlo has all 3 modes available. Normal operations use intrinsically safe Class 1A operations, except LLR where “Protected Mode” will be used. Microjoule operations at 1064 and 532 nm are for research tasks.

Mission Profile Changes



In addition to previous missions, Stromlo has been equipped for:

- *LLR operations*
- *NEO missions [very low LEO and near-space]*

Productivity Objectives



Data quantity and quality to be enhanced by:

- *50 Hz data rate with kHz options [20 Hz old system]*
- *100 cm telescope [75 cm old system]*
- *Automation: Expert system cf “old” full automation*

Laser Improvements



- *30-50 Hz nominal rate, with kHz capability to NEO*
- *1064 nm fundamental with 532/1570 nm outputs also*
- *10 ps pulse width, with 300 fs capability*
- *Zero maintenance. All-diode pumped with 24 months between services of any kind.*
- *Control and engineering interfaces fully operational over LAN/WAN and internet.*

Telescope Improvements



- *100 cm clear aperture*
- *5 urad [1 arcsec] absolute pointing*
- *Upgraded optical wavefront specification*
- *Coatings compatible with fs laser pulses*
- *Auxilliary tracking and guiding systems for LLR*

Program Status



- ***4 Jul 2003: Project commencement.***
- ***4 Dec 2003: EOS designed, built and installed the SLR system [buildings, telescope, dome, laser, etc].***
- ***4 Mar 2004: First Lageos, GPS, LEO tracking***
- ***1 Apr 2004: Official opening. Initial operational testing.***
- ***4 Jul 2004 [Target date]: System operational in ILRS.***

Stromlo SLR: 2004



The new Stromlo SLR system.

The large dome at rear is a 2m telescope deployed to the Space Research Centre for long term operational testing.



Wide view of the new SLR system along with other parts of the EOS Space Research Centre.

